

**BEST AVAILABLE COPY**

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
30 June 2005 (30.06.2005)

**PCT**

(10) International Publication Number  
**WO 2005/059225 A1**

(51) International Patent Classification<sup>7</sup>: **D04H 18/00**,  
1/46, 3/10, 13/00

(74) Agents: **JOLY, Jean-Jacques et al.**; Cabinet Beau de  
Loménie, 158 Rue de l'Université, F-75340 Paris cedex 07  
(FR).

(21) International Application Number:  
**PCT/EP2004/013962**

(22) International Filing Date: 8 December 2004 (08.12.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/527,301 8 December 2003 (08.12.2003) US

(71) Applicant (for all designated States except US):  
**MESSIER-BUGATTI [FR/FR]**; Zone Aéronautique  
Louis Bréguet, F-78140 VELIZY VILLACOUBLAY  
(FR).

(72) Inventor; and

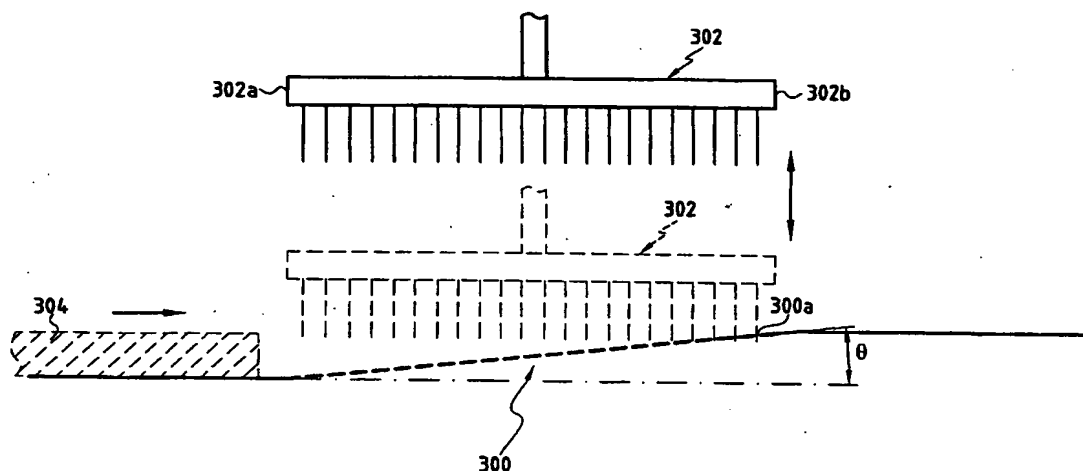
(75) Inventor/Applicant (for US only): **SHORT, Andrew**  
[US/US]; 612 Rosemont, PARK HILLS, Kentucky 41011  
(US).

(81) Designated States (unless otherwise indicated, for every  
kind of national protection available): AE, AG, AL, AM,  
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,  
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,  
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,  
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,  
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,  
ZW.

(84) Designated States (unless otherwise indicated, for every  
kind of regional protection available): ARIPO (BW, GH,  
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,  
FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO,  
SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN,  
GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: METHOD OF PRODUCING A FIBROUS PREFORM



(57) Abstract: Method for producing a fibrous preform, especially by needling a fiber material (e.g., discontinuous pitch-based or PAN-based fiber). A needle-penetrable mold plate (10) having at least one mold cavity (12) therein for receiving the fiber material is provided. The use of a needle-penetrable mold plate allows the mold plate having the fiber material therein to be passed freely through a linear needling device, such as a linear needling loom, without having to take rigorous care to limit a needling path to the discontinuous fiber material, as in the conventional art. The mold plate is moved relative to the needling device one or more times until a desired level of material density (sometimes measured by fiber content percentage) is attained. Preferably, the mold plate is additionally moved and/or allowed to move along a direction generally transverse to the direction along with the mold plate moves relative to the needling device, so as to avoid the conventional problem of needle "tracking" and thereby create a better needling effect.

Express Mail Number

EV 559914395 US

WO 2005/059225 A1